

NEW SPECIES OF *OHAKUNEA* EDWARDS AND A RELATED NEW GENUS WITH
NOTES ON THE RELATIONSHIPS OF *HETEROTRICHA* LOEW. (DIPTERA).

By DONALD H. COLLESS, Division of Entomology, C.S.I.R.O., Canberra.

(Two Text-figures.)

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Synopsis.

The genus *Ohakunea*, previously known only in New Zealand and South America, is recorded from Australia as *O. australiensis*, sp. nov. A related genus is also described, with a single species *Colonomyia albicaulis*, gen. et sp. nov. The family relationships of these genera and the apparently related *Heterotricha* are discussed. It is concluded that the latter belongs in the Mycetophilidae, subfamily Diadocidiinae, while the others are retained for the present in the Sciaridae.

Recent collections of Diptera from New South Wales and Victoria have included two peculiar species of small Nematocera, one rather uncommon and the other distinctly rare. Both were taken by sweeping foliage in rain-forest or wet sclerophyll, in moist, shady places, and most records are from the colder, more mountainous areas. One, the rarer of the two, can be placed in the genus *Ohakunea* Edwards, previously known only from New Zealand and southern South America; the other, although apparently related to *Ohakunea*, clearly requires a new genus. Both are with some difficulty referable to the family (or subfamily) Sciaridae, but, as discussed below, they differ markedly from most of its members, and *Colonomyia*, gen. nov., seems to show some slight relationship with *Heterotricha* Loew. The family status of all three genera is discussed below.

Genus *OHAKUNEA* Edwards.

Edwards and Tonnoir, 1926; *Trans. N.Z. Inst.*, 57: 799 (Type species, *O. bicolor*).

The Australian species, known so far from three male specimens only, agrees well with the original description of this genus, and with that of *O. chilensis* (Freeman, 1951). I prefer, however, to regard the palp as 4-segmented, rather than 3-segmented plus palpiger. The diagnostic characters of the genus, within the Mycetophiloidea, would appear to be as follows: Eyes bare, or nearly so, partially bridged dorsally. Ocelli in a flat triangle, the lateral ones nearly touching the eye margin. Antennae long, with 16 segments, these cylindrical, elongate, and progressively shorter towards the apex. Labium short; palpi 4-segmented (seg. 2 with a sensory area in *O. australiensis*, sp. nov.). Thorax of much the same shape as described below for *Colonomyia*, gen. nov., with relatively high postnotum and pleurosternite; the latter only slightly convex. No mid-pleural pit. Legs slender, without strong spines or bristles; coxae markedly elongate; tibial spurs short, one on fore-tibia, two each on mid- and hind-tibiae; apex of fore-tibia without any sensory area; tarsal claws small to minute, simple.

Wing with minute microtrichia and profuse, long, curved macrotrichia on the membrane. Venation as in Figure 1a; costa not produced; Sc evanescent apically. Sc₂ present but weak (see note under *C. albicaulis*); r-m very long; base of Rs transverse, short, beyond middle of wing; M₃₊₄ rising near base of wing; M and basal portions of its branches very weak, represented mainly by folding of the membrane.

Abdomen with seven distinct pregenital segments. Male terminalia: ninth tergite large, with strong bristles or spines; tenth segment overlying a chitinous armature apparently derived from basal processes of the coxites and the parameres; coxites with a strong, bristly or spinose apical lobe, with the slender, pointed, rather sinuous style rising from near its base.

OHAKUNEA AUSTRALIENSIS, sp. nov.

Types. Holotype male (Mt. Dom-Dom, Vic., 22 Oct. 1961, D. H. Colless) and two paratype males (Macquarie Pass, N.S.W., 2.xi.1960, and Palm Ck., R. Nat. Pk., N.S.W., 29.xii.1960, D. H. Colless; latter mounted on slide) in the Australian National Insect Collection, Canberra.

Type locality: Mt. Dom-Dom (Black Spur), Maroondah Highway, Victoria.

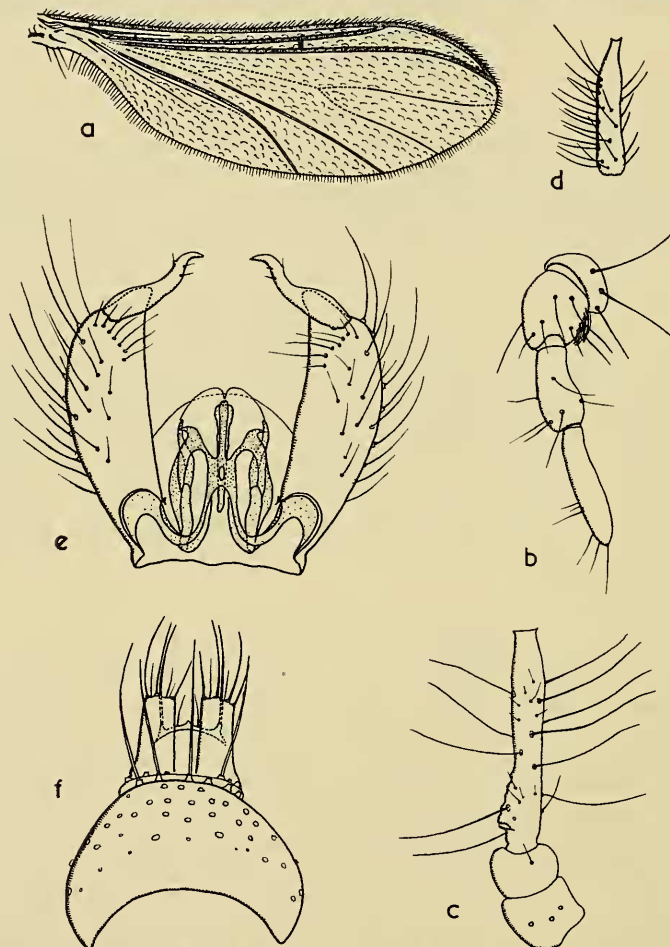


Fig. 1. *Ohakunea australiensis*, sp. nov. (a) Wing; (b) Palp; (c) Antenna, segs. 1-3; (d) Antenna, seg. 12; (e) Male terminalia, dorsal (9th and 10th segments removed; apical lobe dotted, its setae not shown); (f) 9th tergite and anal segment (scale slightly larger than in e).

Male.

Head black above, face yellowish, mouth parts and palps brown. Eyes with scanty fine hairs (visible clearly only in balsam mounts); dorsal bridges short, widely separated, their apices lying opposite the centre of the antenna bases and below the lateral ocelli. Antenna longer than body, almost as long as wing, segs. 1 and 2 yellowish-brown, flagellum dark brown; flagellar segments (Figs 1c, 1d) irregularly cylindrical, with long necks and numerous, long, outstanding hairs, most profuse on the ventral sides, their lengths about equal to those of the segments; lengths of segments 3, 9, 12 and 16 in the ratio 9:7:6:4. Maxilla represented by a weak blade, fringed apically and along internal margin; palp (Fig. 1b) 4-segmented, seg. 2 with a lateral area of blunt-tipped sensillae.

Mesonotum arched anteriorly, rather dark brown, slightly paler laterally; most setae rubbed from my specimens, but dorso-centrals and acrostichals present; scutellum with a pair of strong bristles centrally and weaker ones laterally. Propleuron with several bristles dorsally. Ventral lobes of prosternum triangular, rather unusually prominent. Mesopleura greyish-brown, apparently bare, but a balsam mount shows a patch of 3-4 minute setae immediately below the haltere base. Halteres dark brown, with rather profuse, fine pubescence dorsally on the knob, continuing along most of the stem. Coxae elongate, mid-coxa about as long as the distance from its base to the wing root. Lengths of femur, tibia and tarsus respectively: fore-leg, 21, 32, 47; mid-leg, 23, 34, 48; hind-leg, 29, 38, 38 (units of 0.04 mm.). Tarsal claws minute, barely discernible.

Wing length 2.5-2.8 mm., venation as illustrated (Fig. 1a) and described above; membrane greyish.

Abdomen dark brown with erect dark setae; ninth tergite rather paler. Terminalia partially rotated in one specimen at least; structure as in Figures 1e, 1f; ninth tergite prominent, strongly convex, with an apical row of very strong bristles; lobes of tenth tergite projecting well beyond the sternite; the latter with a pair of strong, incurved lateral setae and a small sub-medial pair. Tenth segment overlying a complex chitinous armature with latero-apical hooked processes. Central rod of mesosome (ejaculatory apodeme) simple. Apical lobe of coxite with strong bristles (not shown in figure) but no spines.

Female. Not known.

Specimens seen: Type series only.

Genus COLONOMYIA nov.

Type species. *C. albicaulis*, sp. nov.

Generally similar to *Ohakunea*, but of rather stouter build and differing as follows: Eyes abundantly haired. Ocelli set in a more obvious triangle, the anterior one between the internal dorsal angles of the eyes. Palp segment 2 without patch of sensillae. Mesonotum evenly arched; postnotum almost vertical, very high, almost as long as the mesonotum (Fig. 2b); pleurotergite similarly high, bulging laterally. Coxae less markedly elongate; apex of fore-tibia with depressed area, containing numerous sensory hairs, on inner surface. Wing (Fig. 2a) with straight macrotrichia; costa produced almost to apex of M1; Sc₂ absent (see note below); R1 ending only a little past centre of wing; Rs base before the centre of wing; Cu₁ rather sharply angled. Terminalia as figured (Figs 2e, 2f, 2g) and described below.

COLONOMYIA ALBICAULIS, sp. nov.

Types. Holotype male (Rutherford Ck., Brown Mt., N.S.W., 10.iii.1961, D. H. Colless), allotype female (Mt. Dom-Dom, Vic., 22 Oct. 1961, D. H. Colless), 10 male and five female paratypes, in the Australian National Insect Collection, Canberra. Also, one paratype of each sex to be lodged in the British Museum (Nat. Hist.), the United States National Museum, and the Bishop Museum, Hawaii.

Type locality: Rutherford Creek, Brown Mountain, Bega District, N.S.W.

Male.

Head very dark brown, mouth parts brown. Antenna dark brown, except for seg. 2, which is yellowish; flagellar segments (Figs 2c, 2d) cylindrical, with dense, fine, short pubescence, the more apical segments with short necks; segs. 3-9 in ratio 10:8:7:6:5:5:4, segs. 9-16 of about the same length; whole antenna about two-thirds the length of the wing. Maxilla represented by a narrow, fringed rod; palps curved back laterally in dried specimens, 4-segmented, of much the same form as in *Ohakunea*.

Thoracic setae dark, integument uniformly dark brown, except the dorsum of the prothorax, which is yellowish; the adjacent margin of the mesonotum, and the ventral margin of the propleuron, also slightly yellowish. Dorso-central and acrostichal setae present, but minute anteriorly. Scutellum with posterior fringe of some 10 setae, the central pair longer and stronger. Pleura with sutures weakly marked, propleura with minute setae, otherwise bare; posterior part of pleurotergite and lateral areas of postnotum minutely pubescent. Halteres prominent, with pale stem and dark knob,

the latter with several fine setae. Coxae completely pale; mid-coxa a little shorter than distance from its base to the wing root; femora rather pale, darkening apically; tibiae and tarsi dark; fore- and mid-legs about 2.5 mm. long, hind leg about 2.8 mm. Tarsal claws small, simple; empodium and pulvilli weakly developed.

Wing as illustrated (Fig. 2*a*), rather short and broad; the base distinctly pale as far as the humeral crossvein; anterior veins brown, membrane greyish; length 2.6-3.0 mm.

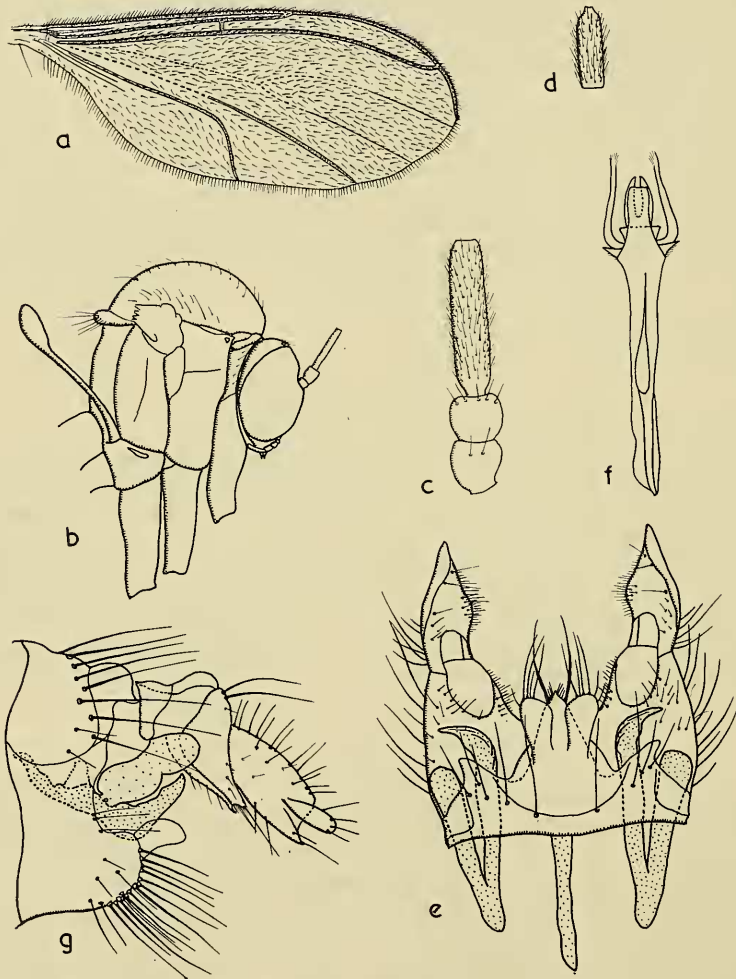


Fig. 2. *Colonomyia albicaulis*, sp. nov. (a) Wing; (b) Thorax, lateral; (c) Antenna, segs. 1-3; (d) Antenna, seg. 12; (e) Male terminalia, dorsal; (f) Central rod (ejaculatory apodeme) of male mesosome; (g) Female terminalia, lateral.

Abdomen with integument and setae all dark brown, except for tenth segment, which is pale brown. Terminalia as in Figures 2*e*, 2*f*, rather complex; ninth tergite narrow centrally, broadening to a pair of blunt lateral lobes; beneath them, a pair of bi-ramous processes, the inner limbs long, pointed, and curved outwards; ninth sternite rather large, fused between the coxites. Styles stout, pointed. Mesosome with central rod (Fig. 2*f*) of very complex structure apically, with a pair of dorsal arms, a simple median lobe, and a bifid ventral lobe.

Female.

Resembling the male, but antennal segment 2 usually pale-brown, rather than yellowish, and knob of haltere more pubescent. Terminalia as in Figure 2*g*; eighth sternite almost completely divided into two lateral lobes which are produced dorsally; apical segment of cercus very small, borne subapically in a depression on the much larger basal segment.

NOTE: I have above described the wing venation as lacking Sc₂. There is, in fact, a distinct connection between Sc and R at the extreme base, just distal to the humeral crossvein, but this does not appear to be analogous to the vein usually described as Sc₂; e.g., *Ohakunea* and *Diadocidia* have both this basal connection and a normal Sc₂. Such a basal connection can be found in a number of Mycetophiloid genera, e.g., *Scythropochroa*, *Australosymmerus*, *Mycetophila*, while it is absent in others, e.g., *Orfelia*.

Specimens seen: N.S.W.: Mt. Wilson, 23.ix.1961, D. K. McAlpine, 1♀; Macquarie Falls, 14.xi.1960, 2 ♂♂; Upper Kangaroo Valley, 21.xi.1960, 1 ♂; Rutherford Ck., Brown Mountain, 19.i., 10.iii., 15.iii., and 11.xi., 1961, 9 ♂♂, 6 ♀♀ (including holotype); Geehi R., 9.xi.1961, 1 ♂. A.C.T.: Bendora, 14.xii.1960, 2 ♂♂. Victoria: Mt. Beauty, 21.x.1961, 1 ♂; Nowa-Nowa, 28.x.1961, 1 ♂, 1 ♀; Mt. Dom-Dom, 22.x.1961, 4 ♂♂, 2 ♀♀ (including allotype); Cement Ck., 27.x.1961, 5 ♂♂, 3 ♀♀. (All but the first, coll. D. H. Colless.)

DISCUSSION.

The discovery of *Ohakunea* in south-eastern Australia is not surprising, and provides another example of the so-called Antarctic distribution pattern. It is interesting to note that *O. australiensis* resembles the Chilean *O. chilensis*, rather than the New Zealand *O. bicolor*, particularly as regards the antennae and male terminalia. *Colonomyia* is probably an endemic genus, related to *Ohakunea* and resembling it closely in wing venation and the structure of eyes and thorax. The resemblance in the shape of thorax, with high, almost vertical postnotum, is particularly striking. Its male terminalia, however, are quite distinctive, and seem in some ways more like those illustrated (Freeman, 1951) for the aberrant genus *Heterotricha*. The latter genus, not so far known to occur in Australia, is found in Chile, New Zealand and South Africa.

All three of these genera are difficult to place in any currently recognized family. Both *Ohakunea* and *Heterotricha* have been placed in the Sciaridae, mainly because of their venation and partially bridged eyes; *Heterotricha* also has a mid-pleural pit (Freeman, 1951). This latter genus, however, was placed by Tonnoir and Edwards (1926) in the Diadocidiinae and I am strongly of the opinion that this was correct. Although I have only published descriptions to go by, comparison with undescribed species of Australian *Diadocidia* shows no difference that could be considered significant at the subfamily level. One of our two species (that referred to by Tonnoir, 1929) has an incomplete, dorsal eye-bridge of an extent greater than in some species of *Heterotricha*, and has a rudimentary mid-pleural pit which is, I suspect, at least the equivalent of that found in some species of that genus. Moreover, a similar pit is present in various genera of Mycetophilidae (*Australosymmerus*, *Mycomyia*, *Exechia*). The venation of *Heterotricha* differs but slightly from that of *Diadocidia*, while there are distinct resemblances in structure of the antennae and male terminalia. There would therefore appear to be no grounds for placing *Heterotricha* anywhere but in the Diadocidiinae, where the rather similar *Pterogymnus* is already lodged (Freeman, 1951).

The position of *Ohakunea* and *Colonomyia* is more difficult to judge, even though their wing venation closely resembles that found in the Sciaridae. They lack the strongly developed mid-pleural pit so characteristic of that family and the presence of an incomplete eye bridge cannot be considered very significant, for reasons discussed above. Also, the long coxae of *Ohakunea*, and the shape of the thorax in both genera, show a closer resemblance to Mycetophilidae such as *Neoaphelomera* and *Austrosynapha*.

Their male terminalia are totally different from the rather uniform pattern found in the Sciaridae, particularly in the chitinous armature which lies below the tenth segment. This seems to be derived from basal processes of the coxite, and/or the parameres; rather similar structures occur in various Mycetophilidae but, as far as I know, not in the Sciaridae. The female terminalia of *Colonomyia* are also not of the Sciarid type.

Pending a thorough investigation of the Mycetophiloidea as a whole, I propose for the present to leave both genera in the Sciaridae. It seems, however, that this may necessitate reduction of that family to its original status, as a subfamily of Mycetophilidae. Alternatively, the Mycetophilidae may have to be split into some 6-8 families, as is done by some European authors.

Acknowledgements.

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References.

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